

**DATA EVALUATION RECORD**  
**CHRONIC (REPEAT DOSE) TOXICITY TESTS WITH THE HONEY BEE (*Apis*  
*mellifera*) LARVAE**  
**NON-GUIDELINE**

1. **CHEMICAL:** Metconazole **PC Code No.:** 125619

2. **TEST MATERIAL:** Metconazole TGAI **Purity:** 98.7%

3. **CITATION**

Authors: K. Kleebaum  
Title: Repeated Exposure of Metconazole TGAI to Honey Bee  
(*Apis Mellifera*) Larvae under Laboratory Conditions (in  
vitro).  
Study Completion Date: February 6, 2017  
Laboratory: BioChem agrar Labor fur biologische und chemische  
Analytik GmbH, Gerichshain, Germany.  
Sponsor: Kureha Corporation, Agrochemicals Department,  
Tokyo, Japan.  
Laboratory Project ID: 16 10 48 115 B  
MRID: 50154601  
DP Barcode: 439183

4. **REVIEWED BY:** Mary Samuel, Environmental Scientist, CDM/CSS-Dynamac JV

*Mary Samuel*  
**Signature:** **Date:** 12/19/2017

5. **REVIEWED BY:** Moncie V. Wright, Environmental Scientist, CDM/CSS-Dynamac JV

*Moncie V Wright*  
**Signature:** **Date:** 4/7/2018  
**(Stats re-do and DER update completed 11/11/2019)**

**REVIEWED BY:** Melissa E. Bridges, Ph.D., Biologist, EPA/OPP/EFED/EISB

**Signature:** **Date:**

Frank T. Farruggia, Ph.D., Senior Biologist, EPA/OPP/EFED/ERB1

**Signature:** **Date:**

*This Data Evaluation Record may have been altered by the Environmental Fate and Effects Division subsequent to signing by CDM/CSS-Dynamac JV personnel. The CDM/CSS-Dynamac Joint Venture role does not include establishing Agency policies.*

## **6. STUDY PARAMETERS**

**Test Species:** Honey bees (*Apis mellifera* L., subspecies *Buckfast*)

**Age of Test Organisms at Test Initiation:** First instar (L1) larvae (1-day old)

**Exposure Duration:** 22 days

## **7. CONCLUSIONS:**

Individual synchronized honey bee (*Apis mellifera* L.) larvae (first instar; 1-day old larvae at initiation of acclimation) were exposed *in vitro* to **Metconazole TGAI** at the nominal diet concentrations and daily doses reported in the table below on Days 3 (D3) through Day 6 (D6) of the study. The reviewer converted the cumulative doses to daily doses by dividing by the number of days of exposure (4). The reviewer calculated the mean-measured concentrations and the % recoveries based on those calculations to calculate the measured daily doses.

Nominal Daily Dietary Dose (µg ai/larva/day)	Measured Daily Dietary Dose (µg ai/larva/day)	Nominal Diet Concentrations (mg ai/kg diet)	Measured Diet Concentrations (mg ai/kg diet)
1.6	1.5	40.6	40.2
3.1	2.9	81.1	76.7
6.3	5.8	162.3	151
13	11	324.6	289
25	21	649.1	542

Larvae used in the study were obtained from in-house colonies. A negative and solvent (acetone 0.5%) control were run; dimethoate was used as a reference toxicant at nominal concentrations of 7.4 µg ai/larva, equivalent to 48 µg ai/g diet. All groups consisted of 36 larvae (replicates); each larva was contained within a plastic grafting cell that was within a 48-well cell culture plate.

All endpoints tested in this study were significantly affected, and there was a dose response relationship. The most sensitive NOAEL (2.9 µg ai/larva/day; NOAEC = 76.7 mg ai/kg diet) was based on 27% reduced adult emergence at 5.8 µg ai/larva/day (151 mg ai/kg diet). At the highest tested dose, a maximum of 34% larval (day 8) mortality was observed. Therefore, the Day 8 (larval) LD/LC<sub>50</sub> could not be estimated.

The study is scientifically sound and is consistent with the OECD Guidance Document for measuring chronic (repeat dose) toxicity to honey bee larvae. The study is classified as acceptable.

	<b>Mortality (Day 8)</b>	<b>Mortality (Day 15)</b>	<b>Adult emergence</b>
Test Concentration mg ai/kg diet	LC <sub>50</sub> > 542 95% CI: N/A Slope: 1.27 (0.674 to 1.87) NOAEC: 76.7 LOAEC: 151	LC <sub>50</sub> : 208 95% CI: 154 to 299 Slope: 1.51 (0.996 to 2.03) NOAEC: 76.7 LOAEC: 151	EC <sub>50</sub> : 183 95% CI: 140 to 247 Slope: 1.73 (1.20 to 2.26) NOAEC: 76.7 LOAEC: 151
Dietary Dose µg ai/larva/day	LD <sub>50</sub> > 21 95% CI: N/A Slope: 1.2 (0.66 to 1.8) NOAEL: 2.9 LOAEL: 5.8	LD <sub>50</sub> : 7.9 95% CI: 5.8 to 11 Slope: 1.5 (0.98 to 2.0) NOAEL: 2.9 LOAEL: 5.8	ED <sub>50</sub> : 7.0 95% CI: 5.3 to 9.5 Slope: 1.7 (1.2 to 2.2) NOAEL: 2.9 LOAEL: 5.8

## **8. ADEQUACY OF THE STUDY**

**A. Classification:** This study is scientifically sound and is classified as acceptable.

**B. Rationale:**

**C. Repairability:**

## **9. GUIDANCE DEVIATIONS:**

Deviations from OECD Guidance Document on the Honey Bee (*Apis mellifera* L.) Larval Toxicity Test following Repeated Exposure, Series on Testing and Assessment, No. 239 (2016) were noted by the reviewer:

1. The study author reported using C-shaped larvae during the grafting process for the experiment. OECD guidance suggests that larvae have not yet formed a C-shape, in order to avoid bias due to possible heterogeneity of larval development.

These deviations do not impact the acceptability of this study.

**10. SUBMISSION PURPOSE:** To determine the chronic effects on growth, development and survival and sublethal effects of **Metconazole TGAI** on the honey bee (*Apis mellifera* L.) larvae from chronic [repeat dose] exposure following the OECD Guidance Document for

the purpose of chemical re-registration.

## **11. MATERIALS AND METHODS**

### **A. Test Material**

Test Material:	<b>Metconazole TGAI</b>
Description:	Not reported
Lot No./Batch No.:	COD-001163
Purity:	98.7%
Stability of compound under test conditions:	The stability of the test material under the test conditions was not determined.
Storage conditions of test chemical:	Stored at ambient temperature (+5 to +30°C).

**Range finding test yes/no (if yes, describe):** A non-GLP range-finding test was performed with metconazole TGAI to determine the definitive dosages, but the study results were not reported.

*OECD recommends a preliminary study with doses of the test chemical in a geometric ratio from 5 to 10.*

### **Physicochemical properties of Metconazole TGAI.**

Parameter	Values	Comments
<b>Molecular Weight</b>	319.8 g/mol	
<b>Water solubility at 20°C (mg/L)</b>	Not reported.	
<b>Vapor pressure (torr, at 25°C)</b>	Not reported.	
<b>Structure</b>	Not reported.	
<b>Mean organic carbon partition coefficient K<sub>oc</sub> (L/kg<sub>oc</sub>)</b>	Not reported.	
<b>Log octanol-water partition coefficient Log K<sub>ow</sub></b>	Not reported.	

### **B. Test Organisms**

Guidance Criteria	Reported Information	Comments
<b>Species</b>	Honey bees ( <i>Apis mellifera</i> L., subspecies <i>Buckfast</i> )	<i>OECD recommends European honey bee (<i>Apis mellifera</i>)</i>
<b>Age at beginning of test</b> Worker bees of uniform age.	First instar (L1) larvae (1 day old) at grafting.	<i>OECD recommends that on D1 of study, first instar (L1) synchronized larvae (i.e., larvae of the same age) are taken from comb of three colonies.</i>
<b>Source</b>	The larvae were provided by BioChem agrar, Germany.	<i>OECD recommends larvae are collected from three different colonies.</i>
<b>Were bees from disease-free colonies?</b>	The larvae were obtained from disease-free, queen-right colonies. No chemical substances were used in the hive at least one month prior to test initiation.	<i>OECD recommends that colonies used to obtain larvae should be adequately fed, healthy (i.e., as far as disease- and parasite-free), with a known history and physiological status.</i>
<b>Were bees kept in conditions conforming to proper cultural practices?</b>	Not reported	
<b>Acclimation conditions</b>	Prior to test initiation, the bee colonies producing the larvae were held under field conditions in the hives including a healthy queen. Brood in egg, larval and pupal stages, and filled food combs containing nectar and pollen were present. Sufficient food was present. On day 1, newly	

Guidance Criteria	Reported Information	Comments
	hatched larvae (1 day old) were transferred from the brood comb to the culture plates and acclimated to test conditions until the start of testing.	

## B. Test System

Guidance Criteria	Reported Information	
<b>Test Chambers</b>	Disinfected, crystal polystyrene grafting cells (NICOTPLAST) with an internal diameter of 9 mm, placed into individual wells of sterile 48-well cellular culture plates. Ventilation was provided by the air-conditioning equipment of the climatic chamber.	<i>OECD recommends 48-well plate with each well containing a crystal polystyrene grafting cell.</i>
<b>Temperature during exposure</b>	34.2 to 35°C	<i>OECD recommends incubator at 34 – 35°C. (34.5 ± 0.5°C). Deviations may occur but temperature should not be lower than 23°C or higher than 40°C; deviations not last more than 15 minutes once every 24 hrs.</i>
<b>Relative humidity during exposure</b>	<u>Grafting on Day 1 until Day 8</u> All: 92 to 98% <u>Day 8 to Day 15</u> All: 76 to 79% <u>Day 15 to Day 22</u> All: 48 to 53%	<i>OECD recommends use of K<sub>2</sub>SO<sub>4</sub> to maintain water saturated atmosphere (95 ± 5%) from D1 – D8. On D8, dental rolls removed from exposure wells, pupal plates placed in incubator containing saturated NaCl to maintain relative humidity of 80% ± 5%.</i>
<b>Lighting</b>	Larvae were maintained in the climatic	

Guidance Criteria	Reported Information	
	chamber in constant darkness and were exposed to diffuse artificial light only during observations and renewal of the diet.	<i>OECD recommends that plates should be maintained in darkness.</i>
<b>Feeding</b>	<p>20 µL of untreated Diet A on Day 1</p> <p>20 µL of untreated or treated Diet B on Day 3</p> <p>30, 40, and 50 µL of untreated or treated Diet C on Day 4, 5, and 6, respectively.</p> <p>Diet A: 50% wt fresh royal jelly + 50% wt of aqueous solution (2% wt yeast extract + 12% wt glucose + 12% wt fructose)</p> <p>Diet B: 50% wt fresh royal jelly + 50% wt of aqueous solution (3% wt yeast extract + 15% wt glucose + 15% wt fructose)</p> <p>Diet C: 50% wt fresh royal jelly + 50% wt of aqueous solution (4% wt yeast extract + 18% wt glucose + 18% wt fructose)</p> <p>Food was dropped next to the larva using a sterile pipette, along the wall of the grafting cell.</p> <p>On feeding days, an aliquot of each diet was warmed up to <i>ca.</i> 34.5°C by placing the culture plates on an adjustable warming plate.</p>	<p><i>OECD recommends that all larvae are fed once a day. Volume of diet is adjusted each day. Additional food should be added to the cell even if previous allocation has not been totally consumed. Presence of uneaten food at termination of test should be reported.</i></p> <p><i>OECD recommends:</i></p> <p><i>Diet A (D1): 50% weight of fresh royal jelly + 50% weight of an aqueous solution containing 2% weight of yeast extract, 12% weight of glucose, and 12% weight fructose.</i></p> <p><i>Diet B (D3): 50% weight of fresh royal jelly + 50% weight of an aqueous solution containing 3% weight of yeast extract, 15% weight of glucose and 15% weight of fructose.</i></p> <p><i>Diet C (from D4 to D6): 50% weight of fresh royal jelly + 50% weight of an aqueous solution containing 4% weight of yeast extract, 18% weight of glucose, and 18% weight of fructose.</i></p> <p><i>OECD recommends the following feeding schedule:</i></p>

Guidance Criteria	Reported Information																												
		<p>The grid shows a logarithmic scale of test concentrations. The columns represent powers of 10, and the rows represent specific concentrations. The grid includes values such as 0.0, 0.1, 1.0, 10, 100, and 500 mg ai/kg diet.</p> <table border="1"> <thead> <tr> <th>Volume of Standard (µl)</th> <th>0.0</th> <th>0.1</th> <th>1.0</th> <th>10</th> <th>100</th> <th>1000</th> <th>10000</th> <th>100000</th> </tr> </thead> <tbody> <tr> <th>Dose</th> <td>D<sub>0</sub></td> <td>D<sub>0.1</sub></td> <td>D<sub>1</sub></td> <td>D<sub>10</sub></td> <td>D<sub>100</sub></td> <td>D<sub>1000</sub></td> <td>D<sub>10000</sub></td> <td>D<sub>100000</sub></td> </tr> <tr> <th>Concentration (mg ai/kg diet)</th> <td>-</td> <td>0.0</td> <td>0.1</td> <td>1.0</td> <td>10</td> <td>100</td> <td>1000</td> <td>10000</td> </tr> </tbody> </table>	Volume of Standard (µl)	0.0	0.1	1.0	10	100	1000	10000	100000	Dose	D <sub>0</sub>	D <sub>0.1</sub>	D <sub>1</sub>	D <sub>10</sub>	D <sub>100</sub>	D <sub>1000</sub>	D <sub>10000</sub>	D <sub>100000</sub>	Concentration (mg ai/kg diet)	-	0.0	0.1	1.0	10	100	1000	10000
Volume of Standard (µl)	0.0	0.1	1.0	10	100	1000	10000	100000																					
Dose	D <sub>0</sub>	D <sub>0.1</sub>	D <sub>1</sub>	D <sub>10</sub>	D <sub>100</sub>	D <sub>1000</sub>	D <sub>10000</sub>	D <sub>100000</sub>																					
Concentration (mg ai/kg diet)	-	0.0	0.1	1.0	10	100	1000	10000																					

### C. Test Design

Guidance Criteria	Reported Information	Comments
<b>Nominal dosage levels tested</b>	<u>Reported by the study author:</u> Dietary concentration (adjusted for purity): 40.6, 81.1, 162.3, 324.6, and 649.1 mg ai/kg diet Daily dietary dose: 1.6, 3.1, 6.3, 13, and 25 µg ai/larva/day	<i>OECD recommends 5 treatments of increasing test concentrations in geometric series spaced by a factor not exceeding 3. Alternatively, when a limit test is performed, a single dose of 40 mg ai/kg diet or the maximum achievable solubility (whichever is lower).</i> <i>Maximum reference toxicant: 40 mg dimethoate/kg diet or 0.25 mg fenoxy carb/kg diet.</i>
<b>Measured test concentrations</b>	Dietary concentration: 40.2, 76.7, 151, 289, and 542 mg ai/kg diet Daily dietary dose: 1.5, 2.9, 5.8, 11, and 21 µg ai/larva/day	<i>OECD recommends test concentrations measured in the stock solution and should be within 20% of nominal.</i>
<b>Number of bees exposed per dosage level</b>	12 larvae per replicate (1 rep = 1 colony) 3 replicates per treatment group 36 larvae total for each treatment group	<i>OECD recommends minimum of 12 larvae from each of 3 colonies allocated on the same plate to each treatment, i.e., minimum of 36 larvae per treatment.</i>

Guidance Criteria	Reported Information	Comments
<b>Other experimental design information</b>	<p>Three days prior to grafting, queens of three colonies were confined in their respective colonies in excluder cages containing combs with empty cells. Two days prior to grafting, the queens were released from the cages. On Day 1, the combs containing larvae were transferred from the hive to the laboratory using a polystyrene box.</p> <p>Larvae were transferred to the surface of the diet in the grafting cells using a grafting tool. C-shaped larvae were placed on the surface of the artificial diet within the grafting cells.</p>	<p><i>OECD recommends that newly hatched larvae are selected that have not yet formed a "C" shape and randomizing the allocation of larvae into the plates for each colony. On Day 1, larva is deposited in cell containing 20 µL diet.</i></p>
<b>Bees randomly or impartially assigned to test groups</b>	Yes.	<p><i>OECD recommends that each group of a minimum of 12 larvae from each of the three colonies is considered a replicate for a given treatment level and identified as such on the microplate.</i></p>
<b>Control</b>	<p>12 larvae per replicate (1 rep = 1 colony)</p> <p>3 replicates</p> <p>36 larvae total</p>	<p><i>OECD recommends 12 larvae x 3 colonies=36 larvae minimum and that control mortality from D3 to D8 should be ≤15%. Adult emergence should be ≥70% on Day 22,</i></p>
<b>Solvent control</b>	Acetone (0.5%).	<p><i>OECD recommends maximum of 2% of diet.</i></p>
<b>Reference Toxicant</b>	Dimethoate, nominal concentration of	

Guidance Criteria	Reported Information	Comments																		
	<p>7.4 µg ai/larva equivalent to 48 mg ai/kg diet.</p>	<p><i>OECD recommends technical grade dimethoate or fenoxy carb at the constant concentration of 40 mg ai/kg diet or 0.25 mg ai/kg diet, respectively and provided at the following amounts:</i></p> <table border="1" data-bbox="1225 614 1535 713"> <thead> <tr> <th>Day</th> <th>D3</th> <th>D4</th> <th>D5</th> <th>D6</th> <th>Total amount larva</th> </tr> </thead> <tbody> <tr> <td>Amount of dimethoate added (µg)</td> <td>0.9</td> <td>1.3</td> <td>1.8</td> <td>2.2</td> <td>6.2</td> </tr> <tr> <td>Amount of fenoxy carb added (µg)</td> <td>5.7</td> <td>8.6</td> <td>11.4</td> <td>14.3</td> <td>40</td> </tr> </tbody> </table> <p><i>Dimethoate larval mortality ≥50% on Day 8; fenoxy carb emergence rate ≤15%.</i></p>	Day	D3	D4	D5	D6	Total amount larva	Amount of dimethoate added (µg)	0.9	1.3	1.8	2.2	6.2	Amount of fenoxy carb added (µg)	5.7	8.6	11.4	14.3	40
Day	D3	D4	D5	D6	Total amount larva															
Amount of dimethoate added (µg)	0.9	1.3	1.8	2.2	6.2															
Amount of fenoxy carb added (µg)	5.7	8.6	11.4	14.3	40															
<b>Total observation period and frequency of interim observations</b>	<p>22 days</p> <p>Mortality assessed daily during the larval phase (Day 3 to Day 8).</p> <p>Mortality assessed between Day 8 and 22 of the pupation phase.</p> <p>Emergence assessed on Day 22.</p> <p>Behavioral and other adverse effects assessed on Day 22.</p> <p>Uneaten food qualitatively assessed on Day 8.</p>	<p><i>OECD recommends that following chemical exposure on Days 3 - 6, mortalities are checked at time of feeding on D4 – D8, D15, and D22 (test termination). Adult emergence at D22; non-emerged bees on D22 are recorded as pupal mortality. Other observations including presence of uneaten food on D8 should be qualitatively reported. Morphological differences (from controls) should also be recorded.</i></p>																		

## 12. REPORTED RESULTS

Guidance Criteria	Reported Information
<b>Quality assurance and GLP compliance statements were included in the report?</b>	Yes. This study was conducted in compliance with OECD (1997) Principles of GLP and GLP Principles of German (Chemical Act) and meets the U.S. EPA GLP established under FIFRA (40 CFR, Part 160) and Part 792 (TSCA), with the exception that recognized differences exist between the OECD Principles of GLP and the Principles of FIFRA and TSCA.
<b>Observed adverse effects on bees at respective dosages</b>	Yes; details provided in the Mortality and Observations section.
<b>Control Mortality</b>	2.8% and 8.3% larval mortality in the negative and solvent controls, respectively. 20% and 9.1% pupal mortality in the negative and solvent controls, respectively. 22.2% and 16.7% cumulative mortality on Day 22 in negative and solvent controls, respectively. 77.8% and 83.3% emergence in the negative and solvent controls, respectively.
<b>Were raw data included?</b>	Yes.
<b>Analytical Analysis?</b>	Analytical verification performed using HPLC with MS-detection. LOQ = 19.07 mg/kg LOD = 5.75 mg/kg

#### **Mortality and Observations:**

At Day 8, larval mortality averaged 2.8 and 8.3% in the negative and solvent controls, respectively, as compared to mortality ranging from 2.8 to 33.3% in the treatment groups. On Day 15, pupal mortality averaged 13.9% in the negative and solvent controls, as compared to mortality ranging from 16.7 to 72.2% in the treatment groups.

At Day 22, adult emergence averaged 77.8% and 83.3% in the negative and solvent controls,

respectively. Emergence ranged from 25 to 83.3% in the treated groups.

The dimethoate treatment resulted in 97.2% mortality on Day 22.

**Table 1. Cumulative honey bee larval mortality data after repeat dietary exposure (dose).**

Experimental Group Dietary Concentration (Dose)	Number Exposed	Day 8 (%)	Day 15 (%)	Day 22 (%)
Negative Control	36	2.8	13.9	22.2
Solvent Control	36	8.3	13.9	16.7
40.2 mg ai/kg diet (1.5 µg ai/larva/day)	36	2.8	16.7	16.7
76.7 mg ai/kg diet (2.9 µg ai/larva/day)	36	11.1	19.4	19.4
151 mg ai/kg diet (5.8 µg ai/larva/day)	36	16.7	38.9	38.9
289 mg ai/kg diet (11 µg ai/larva/day)	36	33.3	72.2	75
542 mg ai/kg diet (21 µg ai/larva/day)	36	30.3	66.7	75
Dimethoate tech.				
48 mg ai/kg diet (7.4 µg ai/larva)	36	88.9	97.2	97.2

**Table 2. Cumulative honey bee adult emergence data after repeat dietary exposure (dose).**

Experimental Group Dietary Concentration (Dose)	Number Exposed	Day 22 (%)
Negative Control	36	77.8
Solvent Control	36	83.3
40.2 mg ai/kg diet (1.5 µg ai/larva/day)	36	83.3
76.7 mg ai/kg diet (2.9 µg ai/larva/day)	36	80.6
151 mg ai/kg diet (5.8 µg ai/larva/day)	36	61.1
289 mg ai/kg diet (11 µg ai/larva/day)	36	25
542 mg ai/kg diet (21 µg ai/larva/day)	36	25
Dimethoate tech.		
48 mg ai/kg diet (7.4 µg ai/larva)	36	2.8

**Reported Statistical Analysis**

The NOAEC and NOAEL values were determined by the Step-down Cochran-Armitage Test. The LD<sub>50</sub>, and ED<sub>50</sub> with 95% confidence limits were calculated by Probit analysis using linear maximum likelihood regression. All statistical analyses were conducted using the computer program ToxRatPro, Version 3.2.1. The study author used the nominal dietary concentrations and nominal cumulative dietary doses for the analyses and reporting.

	Mortality (Day 8)	Adult emergence
Test Concentration mg ai/kg diet	LC <sub>50</sub> : 947* 95% CI: 540 to 1661 Slope: 2.64 NOAEC: 162	EC <sub>50</sub> : 299 95% CI: 171 to 522 Slope: 2.62 NOAEC: 81

	LOAEC: 325	LOAEC: 162
Dietary Dose µg ai/larva/day	LD <sub>50</sub> : 146* 95% CI: 83.1 to 256.3) Slope: 2.64 NOAEL: 25 LOAEL: 50	ED <sub>50</sub> : 46.1 95% CI: 26.4 to 80.4 Slope: 2.62 NOAEL: 12.5 LOAEL: 25

### Reviewer's Statistical Verification

Mortality and emergence data were analyzed using CETIS statistical software version 1.9.2.8/1.9.5.3 with database backend settings implemented by EFED on 7/25/17. The test codes were designated the MRID 50154601, followed by the acronyms "dc" for diet concentration and "dd" for dietary dose. The reviewer-calculated measured concentrations and measured daily dietary doses were used for the analyses.

The negative and solvent controls were compared using Fisher's Exact Test and no significant differences were determined by the reviewer. All treatment groups were compared to the negative control.

All data were monotonic so were analyzed using the Cochran-Armitage Trend Test. The Day 8 and Day 15 LD/LC<sub>50</sub> values, Day 22 ED/EC<sub>50</sub> values, and corresponding 95% confidence intervals were determined using generalized linear regression with a probit link function. It should be noted that the LC/LD<sub>50</sub> estimates for Day 8 (larval) mortality should not be interpreted or used in a risk assessment because these values were extrapolated beyond the highest test level (see Table below).

	<b>Mortality (Day 8)</b>	<b>Mortality (Day 15)</b>	<b>Adult emergence</b>
Test Concentration mg ai/kg diet	LC <sub>50</sub> : >542 95% CI: NA Slope: 1.27 (0.674 to 1.87) NOAEC: 76.7 LOAEC: 151	LC <sub>50</sub> : 208 95% CI: 154 to 299 Slope: 1.51 (0.996 to 2.03) NOAEC: 76.7 LOAEC: 151	EC <sub>50</sub> : 183 95% CI: 140 to 247 Slope: 1.73 (1.20 to 2.26) NOAEC: 76.7 LOAEC: 151
Dietary Dose µg ai/larva/day	LD <sub>50</sub> : >21 95% CI: NA Slope: 1.2 (0.66 to 1.8) NOAEL: 2.9 LOAEL: 5.8	LD <sub>50</sub> : 7.9 95% CI: 5.8 to 11 Slope: 1.5 (0.98 to 2.0) NOAEL: 2.9 LOAEL: 5.8	ED <sub>50</sub> : 7.0 95% CI: 5.3 to 9.5 Slope: 1.7 (1.2 to 2.2) NOAEL: 2.9 LOAEL: 5.8

### **13. REVIEWER'S COMMENTS:**

The reviewer's and the study author's results differed with regard to the Day 8 NOAEC/NOAEL

values and the Day 8 and Day 22 LC/LD values due to the following reasons: 1.) the study author used the nominal dietary concentrations and nominal cumulative dietary doses for the analyses and reporting, whereas the reviewer used the measured dietary concentrations and measured daily dietary doses; and 2.) the study author calculated the LD/LC<sub>50</sub> values with the ToxRatPro, Version 3.2.1with compensation included for the response of the solvent control, whereas the reviewer used linear regression analysis and did not consider the response of the solvent control in any of the analyses. Further, the study author did not analyze pupal mortality. The reviewer's results are reported in the Conclusions section of this DER.

The study author reported the cumulative dietary doses, which the reviewer converted to daily dietary dose by dividing the doses by the number of dosing days (4). The reviewer applied the % recoveries reported in the analytical report to the daily dietary doses to obtain the measured daily dietary doses.

Larval mortality from days 3 to 8 in the negative control should be ≤15% prior to pupation. In this study, larval mortality in the negative and solvent controls was 2.8% and 8.3%, respectively, and met the criteria. Adult emergence should be ≥70% in the controls on Day 22. In the present study, adult emergence was 77.8% and 83.3% in the negative and solvent controls, respectively, and met the criteria.

Larval mortality in the positive control (dimethoate) should be ≥50% on Day 8. In this test, larval mortality in the positive control was 97.2% and meets this criterion.

The in-life phase of the definitive test was conducted from August 22 to September 12, 2016.

#### **14. REVIEWER'S CONCLUSIONS:**

This study is scientifically sound and is classified as acceptable. There was treatment-related toxicity on larval and pupal mortality and adult emergence. The most sensitive NOAEL (2.9 µg ai/larva/day; NOAEC = 76.7 mg ai/kg diet) was based on 27% reduced adult emergence at 5.8 µg ai/larva/day (151 mg ai/kg diet). At the highest tested dose, a maximum of 34% larval (day 8) mortality was observed. Therefore, the Day 8 (larval) LD/LC<sub>50</sub> could not be estimated.

#### **References**

ABBOTT W. S.: A method of computing the effectiveness of an insecticide. J. Econ. Entomol. 18, 265-267, 1925.

Chemikaliengesetz in der Fassung der Bekanntmachung vom 28. August 2013 (BGBl. I S. 3498,

DP Barcode: 439183

MRID No.: 50154601

3991), das zuletzt durch Artikel 431 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist.

Translation:

Chemicals Act in the version published on 28 August 2013 (Federal Law Gazette I p. 3498, 3991), as last amended by article 431 of the Regulation of 31 August 2015 (Federal Law Gazette I p. 1474).

Directive 2004/10/EC of 11 February 2004 amending Council Directive 87/18/EEC, Official Journal of the European Union N° L 50: 44-59.

EFSA (2013): EFSA Guidance Document on the risk assessment of plant protection products on bees (*Apis mellifera*, *Bombus* spp. and solitary bees). EFSA Journal 11(7): 3295, 266 pp.

Guidance Document on Terrestrial Ecotoxicology Under Council Directive 91/414/EEC. SANCO/10329/2002 rev 2 final, 17 October 2002.

OECD (2016), Guidance Document on Honey Bee Larval Toxicity Test following Repeated Exposure, Environment Monograph, Series on Testing and Assessment no. 239, OECD, Paris.

The application of the OECD Principles of GLP to the Organization and Management of Multi-Site Studies (ENV/JM/MONO(2002)9).

OECD Principles of Good Laboratory Practice (as revised in 1997). ENV/MC/CHEM(98)17.

RATTE M.: ToxRat Professional (latest version), ToxRat Solutions GmbH, Naheweg 15, 52477 Alsdorf, Germany.

Regulation (EC) No 1107/2009 of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. Official J. Eur. Union, L 309, 1-50.

SCHNEIDER-ORELLI O.: Entomologisches Praktikum. 1947. H.R. Sauerlander. Aarau. Switzerland.  
Translation:

SCHNEIDER-ORELLI O.: Entomological practical course. 1947. H.R. Sauerlander. Aarau. Switzerland.

# CETIS Summary Report

Report Date: 11 Nov-19 20:47 (p 1 of 3)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
Sample ID:	01-6308-5245	Code:	50154601 dd	Project:	Fungicide
Sample Date:	22 Aug-16	Material:	Metconazole	Source:	Valent U.S.A. Corporation
Receipt Date:	12 Sep-16	CAS (PC):		Station:	
Sample Age:	n/a	Client:	EPA OSCPP EFED	Age:	

125619 50154601 - measured daily dietary dose  
 endpoint...

The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

### Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result		S
06-7434-1103	Adult Emergence Rate	Fisher Exact Test	0.7668	Solvent Blank passed adult emergence rate		1
19-8087-6999	Day 15 Mortality	Fisher Exact Test	1.0000	Solvent Blank passed day 15 mortality		1
11-3989-3893	Larval Mortality	Fisher Exact Test	0.6142	Solvent Blank passed larval mortality		1

### Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
00-7497-1421	Adult Emergence Rate	Cochran-Armitage (N) Trend Test	✓ 2.9	5.8	4.101		n/a	1
01-3961-4775	Adult Emergence Rate	Fisher Exact/Bonferroni-Holm Test	5.8	11	7.987		n/a	1
04-4516-8644	Day 15 Mortality	Cochran-Armitage (N) Trend Test	✓ 2.9	5.8	4.101		n/a	1
17-1808-3319	Day 15 Mortality	Fisher Exact/Bonferroni-Holm Test	✓ 2.9	5.8	4.101		n/a	1
10-4948-3654	Larval Mortality	Cochran-Armitage (N) Trend Test	✓ 2.9	5.8	4.101		n/a	1
19-8925-7740	Larval Mortality	Fisher Exact/Bonferroni-Holm Test	5.8	11	7.987		n/a	1

### Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	ug/larva	95% LCL	95% UCL	TU	S
02-4228-9344	Adult Emergence Rate	GLM: Log-Normal (Probit)	EC5	0.761	0.286	1.31		1
			EC10	1.24	0.572	1.94		
			EC25	2.82	1.77	3.82		
			✓ EC50	7	5.33	9.47		
03-1594-1462	Adult Emergence Rate	Trimmed Spearman-Kärber	EC50	8.39	7.2	9.78		1
10-5429-5425	Day 15 Mortality	GLM: Log-Normal (Probit)	✓ LC5	0.627	0.18	1.19		1
			✓ LC10	1.1	0.415	1.84		
			✓ LC25	2.8	1.62	3.94		
			LC50	7.94	5.86	11.5		
16-4682-2011	Day 15 Mortality	Trimmed Spearman-Kärber	LC50	8.47	6.91	10.4		1
02-6258-4330	Larval Mortality	GLM: Log-Normal (Probit)	LC5	1.59	0.349	2.93		1
			LC10	3.09	1.16	4.9		
			LC25	9.42	6.2	16		
			LC50	32.5	18.3	130		

**CETIS Summary Report**

Report Date: 11 Nov-19 20:47 (p 2 of 3)  
 Test Code/ID: 50154601 dd / 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar****Adult Emergence Rate Summary**

Conc-ug/larva	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.833	0.626	1.000	0.750	0.917	0.048	0.083	10.00%	0.00%
0	N	3	0.778	0.539	1.000	0.667	0.833	0.056	0.096	12.37%	6.67%
1.5		3	0.833	0.833	0.833	0.833	0.833	0.000	0.000	0.00%	0.00%
2.9		3	0.806	0.567	1.000	0.750	0.917	0.056	0.096	11.95%	3.33%
5.8		3	0.611	0.180	1.000	0.417	0.750	0.100	0.173	28.39%	26.67%
11		3	0.250	0.043	0.457	0.167	0.333	0.048	0.083	33.33%	70.00%
21		3	0.250	0.250	0.250	0.250	0.250	0.000	0.000	0.00%	70.00%

**Day 15 Mortality Summary**

Conc-ug/larva	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.139	0.019	0.258	0.083	0.167	0.028	0.048	34.64%	0.00%
0	N	3	0.139	0.000	0.455	0.000	0.250	0.074	0.127	91.65%	0.00%
1.5		3	0.167	0.167	0.167	0.167	0.167	0.000	0.000	0.00%	3.23%
2.9		3	0.194	0.000	0.433	0.083	0.250	0.056	0.096	49.49%	6.45%
5.8		3	0.389	0.000	0.820	0.250	0.583	0.100	0.173	44.61%	29.03%
11		3	0.722	0.483	0.961	0.667	0.833	0.056	0.096	13.32%	67.74%
21		3	0.667	0.460	0.874	0.583	0.750	0.048	0.083	12.50%	61.29%

**Larval Mortality Summary**

Conc-ug/larva	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.083	0.083	0.083	0.083	0.083	0.000	0.000	0.00%	0.00%
0	N	3	0.028	0.000	0.147	0.000	0.083	0.028	0.048	173.21%	-6.06%
1.5		3	0.028	0.000	0.147	0.000	0.083	0.028	0.048	173.21%	-6.06%
2.9		3	0.111	0.000	0.427	0.000	0.250	0.074	0.127	114.56%	3.03%
5.8		3	0.167	0.000	0.374	0.083	0.250	0.048	0.083	50.00%	9.09%
11		3	0.333	0.000	0.692	0.250	0.500	0.083	0.144	43.30%	27.27%
21		3	0.361	0.000	1.000	0.083	0.667	0.169	0.293	81.04%	30.30%

**CETIS Summary Report**Report Date: 11 Nov-19 20:47 (p 3 of 3)  
Test Code/ID: 50154601 dd / 14-2719-5080**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar****Adult Emergence Rate Detail**

Conc-ug/larva	Code	Rep 1	Rep 2	Rep 3
0	S	0.833	0.750	0.917
0	N	0.667	0.833	0.833
1.5		0.833	0.833	0.833
2.9		0.750	0.917	0.750
5.8		0.667	0.750	0.417
11		0.250	0.167	0.333
21		0.250	0.250	0.250

**Day 15 Mortality Detail**

Conc-ug/larva	Code	Rep 1	Rep 2	Rep 3
0	S	0.167	0.167	0.083
0	N	0.250	0.167	0.000
1.5		0.167	0.167	0.167
2.9		0.250	0.083	0.250
5.8		0.333	0.250	0.583
11		0.667	0.833	0.667
21		0.583	0.667	0.750

**Larval Mortality Detail**

Conc-ug/larva	Code	Rep 1	Rep 2	Rep 3
0	S	0.083	0.083	0.083
0	N	0.000	0.083	0.000
1.5		0.083	0.000	0.000
2.9		0.250	0.000	0.083
5.8		0.167	0.083	0.250
11		0.250	0.250	0.500
21		0.333	0.083	0.667

**CETIS Summary Report**

**Report Date:** 06 Apr-18 16:33 (p 1 of 3)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations  
Mortality' endpoint...

The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Point Estimate Summary**

Analysis ID	Endpoint	Point Estimate Method	Level	mg ai/kg	95% LCL	95% UCL	TU	✓
00-0733-8455	Adult Emergence Rate	Regression: Log-Normal (Probit)	EC5	20.56	7.842	35.14		
			EC10	33.34	15.53	51.62		
			EC15	46.19	24.49	67.26		
			EC20	59.86	34.99	83.44		
			EC25	74.76	47.24	101		
			EC40	130.9	96.22	170.9	✓	
			EC50	183.4	140.2	247	✓	
16-1587-3140	Adult Emergence Rate	Trimmed Spearman-Kärber	EC50	219.6	187.9	256.6		
02-7750-2962	Day 15 Mortality	Regression: Log-Normal (Probit)	LC5	16.97	4.978	31.89	✓	
			LC10	29.5	11.34	48.97	✓	
			LC15	42.85	19.63	65.82	✓	
			LC20	57.64	30.16	83.83	✓	
			LC25	74.33	43.26	104	✓	
			LC40	141.1	100.3	191.4		
			LC50	207.5	153.7	299		
00-7213-8697	Day 15 Mortality	Trimmed Spearman-Kärber	LC50	221.6	180.3	272.4		
16-8616-6523	Larval Mortality	Regression: Log-Normal (Probit)	LC5	42.38	9.526	77.58		
			LC10	81.87	31.05	128.9		
			LC15	127.7	65.62	190.7		
			LC20	181.7	111.3	278.3		
			LC25	246	162.6	414.3		
			LC40	527.7	332.5	1436		
			LC50	835.2	474.9	3266		

**CETIS Summary Report**

Report Date:

06 Apr-18 16:33 (p 2 of 3)

Test Code:

50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar****Adult Emergence Rate Summary**

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.8333	0.6263	1.0000	0.7500	0.9167	0.0481	0.0833	10.00%	0.00%
0	N	3	0.7778	0.5387	1.0000	0.6667	0.8333	0.0556	0.0962	12.37%	6.67%
40.2		3	0.8333	0.8333	0.8333	0.8333	0.8333	0.0000	0.0000	0.00%	0.00%
76.7		3	0.8056	0.5665	1.0000	0.7500	0.9167	0.0556	0.0962	11.95%	3.33%
151		3	0.6111	0.1802	1.0000	0.4167	0.7500	0.1002	0.1735	28.39%	26.67%
289		3	0.2500	0.0430	0.4570	0.1667	0.3333	0.0481	0.0833	33.33%	70.00%
542		3	0.2500	0.2500	0.2500	0.2500	0.2500	0.0000	0.0000	0.00%	70.00%

**Day 15 Mortality Summary**

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.1389	0.0194	0.2584	0.0833	0.1667	0.0278	0.0481	34.64%	0.00%
0	N	3	0.1389	0.0000	0.4551	0.0000	0.2500	0.0735	0.1273	91.65%	0.00%
40.2		3	0.1667	0.1667	0.1667	0.1667	0.1667	0.0000	0.0000	0.00%	3.23%
76.7		3	0.1944	0.0000	0.4335	0.0833	0.2500	0.0556	0.0962	49.49%	6.45%
151		3	0.3889	0.0000	0.8198	0.2500	0.5833	0.1002	0.1735	44.61%	29.03%
289		3	0.7222	0.4832	0.9613	0.6667	0.8333	0.0556	0.0962	13.32%	67.74%
542		3	0.6667	0.4597	0.8737	0.5833	0.7500	0.0481	0.0833	12.50%	61.29%

**Larval Mortality Summary**

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	3	0.0833	0.0833	0.0833	0.0833	0.0833	0.0000	0.0000	0.00%	0.00%
0	N	3	0.0278	0.0000	0.1473	0.0000	0.0833	0.0278	0.0481	173.21%	-6.06%
40.2		3	0.0278	0.0000	0.1473	0.0000	0.0833	0.0278	0.0481	173.21%	-6.06%
76.7		3	0.1111	0.0000	0.4273	0.0000	0.2500	0.0735	0.1273	114.56%	3.03%
151		3	0.1667	0.0000	0.3737	0.0833	0.2500	0.0481	0.0833	50.00%	9.09%
289		3	0.3333	0.0000	0.6919	0.2500	0.5000	0.0833	0.1443	43.30%	27.27%
542		3	0.3611	0.0000	1.0000	0.0833	0.6667	0.1690	0.2927	81.04%	30.30%

**CETIS Summary Report**Report Date: 06 Apr-18 16:33 (p 3 of 3)  
Test Code: 50154601 dc | 15-2206-3849**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar****Adult Emergence Rate Detail**

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	S	0.8333	0.7500	0.9167
0	N	0.6667	0.8333	0.8333
40.2		0.8333	0.8333	0.8333
76.7		0.7500	0.9167	0.7500
151		0.6667	0.7500	0.4167
289		0.2500	0.1667	0.3333
542		0.2500	0.2500	0.2500

**Day 15 Mortality Detail**

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	S	0.1667	0.1667	0.0833
0	N	0.2500	0.1667	0.0000
40.2		0.1667	0.1667	0.1667
76.7		0.2500	0.0833	0.2500
151		0.3333	0.2500	0.5833
289		0.6667	0.8333	0.6667
542		0.5833	0.6667	0.7500

**Larval Mortality Detail**

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	S	0.0833	0.0833	0.0833
0	N	0.0000	0.0833	0.0000
40.2		0.0833	0.0000	0.0000
76.7		0.2500	0.0000	0.0833
151		0.1667	0.0833	0.2500
289		0.2500	0.2500	0.5000
542		0.3333	0.0833	0.6667

# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 1 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID:	01-3961-4775	Endpoint:	Adult Emergence Rate	CETIS Version:	CETISv1.9.5
Analyzed:	11 Nov-19 20:43	Analysis:	STP 2xK Contingency Tables	Status Level:	1
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
Data Transform	Alt Hyp			NOEL	LOEL
Untransformed	C > T			5.8	11
					7.987

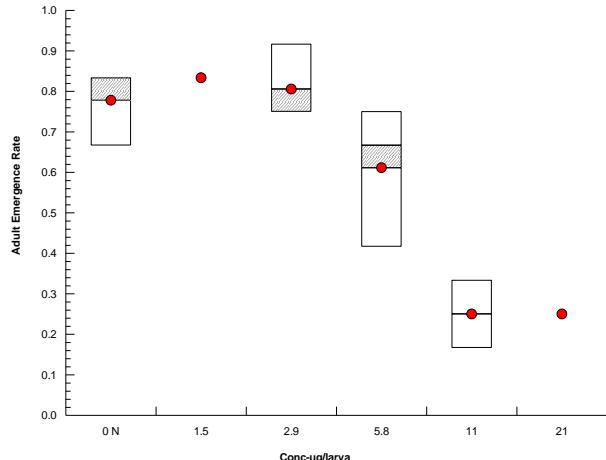
### Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	0.814	Exact	0.8138	Non-Significant Effect
		2.9	0.719	Exact	1.0000	Non-Significant Effect
		5.8	0.100	Exact	0.3005	Non-Significant Effect
		11*	0.000	Exact	3.6E-05	Significant Effect
		21*	0.000	Exact	3.6E-05	Significant Effect

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	28	8	36	0.778	0.222	0.0%
1.5		30	6	36	0.833	0.167	-7.14%
2.9		29	7	36	0.806	0.194	-3.57%
5.8		22	14	36	0.611	0.389	21.4%
11		9	27	36	0.25	0.75	67.9%
21		9	27	36	0.25	0.75	67.9%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 2 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 00-7497-1421	Endpoint: Adult Emergence Rate	CETIS Version: CETISv1.9.5
Analyzed: 11 Nov-19 20:44	Analysis: STP 2xK Contingency Tables-Numerical Sc	Status Level: 1
Batch ID: 15-4629-2282	Test Type: OECD 2014 HB Larval Repeat Exp	Analyst:
Start Date: 22 Aug-16	Protocol: Larval Chronic Oral Toxicity, 21-day Study	Diluent:
Ending Date: 12 Sep-16	Species: Apis mellifera	Brine:
Test Length: 21d 0h	Taxon:	Source: Lab In-House Culture Age:
Data Transform	Alt Hyp	NOEL LOEL TOEL TU
Untransformed	C > T	2.9 5.8 4.101

### Cochran-Armitage (N) Trend Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	-0.596	Asymp	0.7243	Non-Significant Effect
		2.9	-0.308	Asymp	0.6210	Non-Significant Effect
		5.8*	1.931	Asymp	0.0268	Significant Effect
		11*	5.841	Asymp	<1.0E-37	Significant Effect
		21*	6.708	Asymp	<1.0E-37	Significant Effect

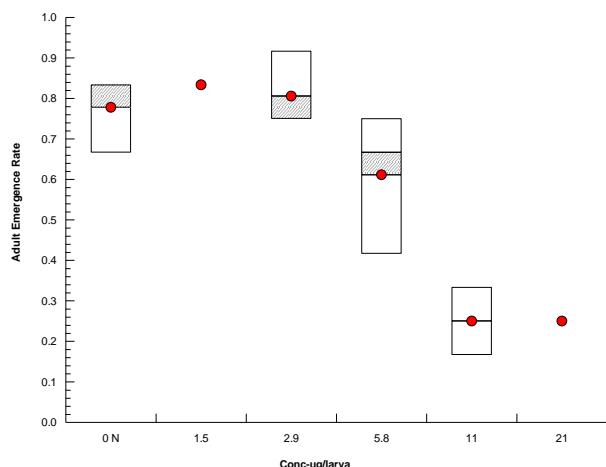
### Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Overall Effect	Pearson Chi-Square Test	55.4	11.1	<1.0E-37	Significant Overall Effect
Nonlinearity	Chi-Square Lack of Fit Test	10.4	9.49	0.0348	Significant Lack of Linearity
Overdispersion	Tarone C( $\alpha$ ) Binomial Overdispersion Test	1.28	1.64	0.1004	Non-Significant Overdispersion

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	28	8	36	0.778	0.222	0.0%
1.5		30	6	36	0.833	0.167	-7.14%
2.9		29	7	36	0.806	0.194	-3.57%
5.8		22	14	36	0.611	0.389	21.4%
11		9	27	36	0.25	0.75	67.9%
21		9	27	36	0.25	0.75	67.9%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 3 of 9)  
Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID:	06-7434-1103	Endpoint:	Adult Emergence Rate	CETIS Version:	CETISv1.9.5
Analyzed:	11 Nov-19 20:44	Analysis:	Single 2x2 Contingency Table	Status Level:	1
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
					Age:

Data Transform	Alt Hyp	Comparison Result
Untransformed	C <> T	Solvent Blank passed adult emergence rate

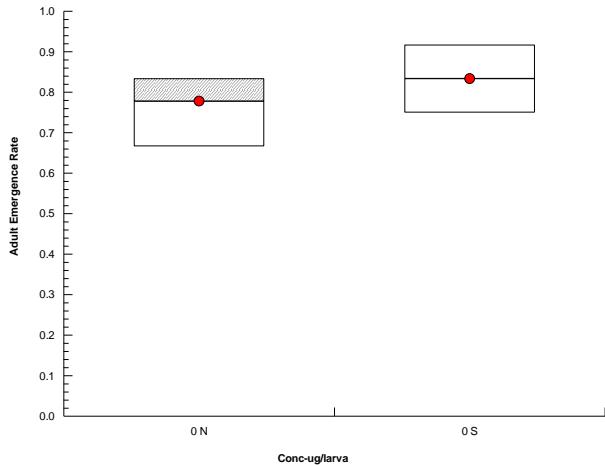
### Fisher Exact Test

Control	vs	Control	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		0.767	Exact	0.7668	Non-Significant Effect

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	S	30	6	36	0.833	0.167	-7.14%
0	N	28	8	36	0.778	0.222	0.0%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 4 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID:	17-1808-3319	Endpoint:	Day 15 Mortality	CETIS Version:	CETISv1.9.5
Analyzed:	11 Nov-19 20:43	Analysis:	STP 2xK Contingency Tables	Status Level:	1
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
Data Transform	Alt Hyp			NOEL	LOEL
Untransformed	C < T			2.9	5.8
					4.101

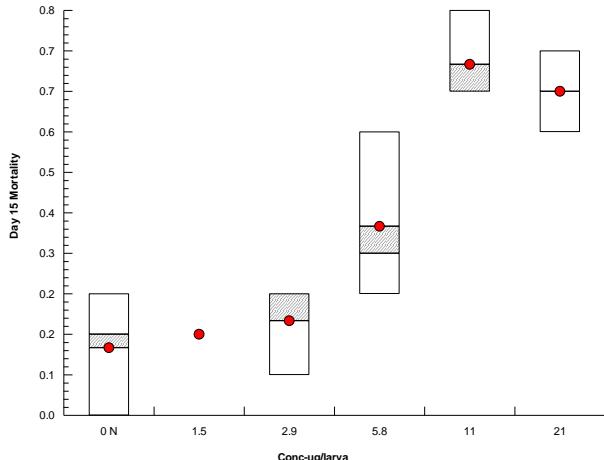
### Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	0.500	Exact	0.5000	Non-Significant Effect
		2.9	0.377	Exact	0.7531	Non-Significant Effect
		5.8*	0.015	Exact	0.0463	Significant Effect
		11*	0.000	Exact	2.3E-06	Significant Effect
		21*	0.000	Exact	1.8E-05	Significant Effect

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	31	5	36	0.861	0.139	0.0%
1.5		30	6	36	0.833	0.167	-20.0%
2.9		29	7	36	0.806	0.194	-40.0%
5.8		22	14	36	0.611	0.389	-180.0%
11		10	26	36	0.278	0.722	-420.0%
21		12	24	36	0.333	0.667	-380.0%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 5 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 04-4516-8644	Endpoint: Day 15 Mortality	CETIS Version: CETISv1.9.5
Analyzed: 11 Nov-19 20:43	Analysis: STP 2xK Contingency Tables-Numerical Sc	Status Level: 1
Batch ID: 15-4629-2282	Test Type: OECD 2014 HB Larval Repeat Exp	Analyst:
Start Date: 22 Aug-16	Protocol: Larval Chronic Oral Toxicity, 21-day Study	Diluent:
Ending Date: 12 Sep-16	Species: Apis mellifera	Brine:
Test Length: 21d 0h	Taxon:	Source: Lab In-House Culture Age:
Data Transform	Alt Hyp	NOEL LOEL TOEL TU
Untransformed	C < T	2.9 5.8 4.101

### Cochran-Armitage (N) Trend Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	0.328	Asymp	0.3716	Non-Significant Effect
		2.9	0.632	Asymp	0.2637	Non-Significant Effect
		5.8*	2.709	Asymp	0.0034	Significant Effect
		11*	6.184	Asymp	<1.0E-37	Significant Effect
		21*	6.321	Asymp	<1.0E-37	Significant Effect

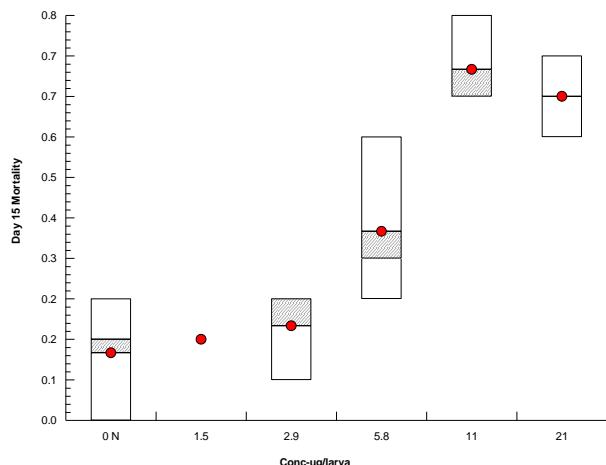
### Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Overall Effect	Pearson Chi-Square Test	51.6	11.1	<1.0E-37	Significant Overall Effect
Nonlinearity	Chi-Square Lack of Fit Test	11.6	9.49	0.0203	Significant Lack of Linearity
Overdispersion	Tarone C( $\alpha$ ) Binomial Overdispersion Test	1.28	1.64	0.1004	Non-Significant Overdispersion

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	31	5	36	0.861	0.139	0.0%
1.5		30	6	36	0.833	0.167	-20.0%
2.9		29	7	36	0.806	0.194	-40.0%
5.8		22	14	36	0.611	0.389	-180.0%
11		10	26	36	0.278	0.722	-420.0%
21		12	24	36	0.333	0.667	-380.0%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 6 of 9)  
Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID:	19-8087-6999	Endpoint:	Day 15 Mortality	CETIS Version:	CETISv1.9.5
Analyzed:	11 Nov-19 20:44	Analysis:	Single 2x2 Contingency Table	Status Level:	1
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
					Age:

Data Transform	Alt Hyp	Comparison Result
Untransformed	C <> T	Solvent Blank passed day 15 mortality

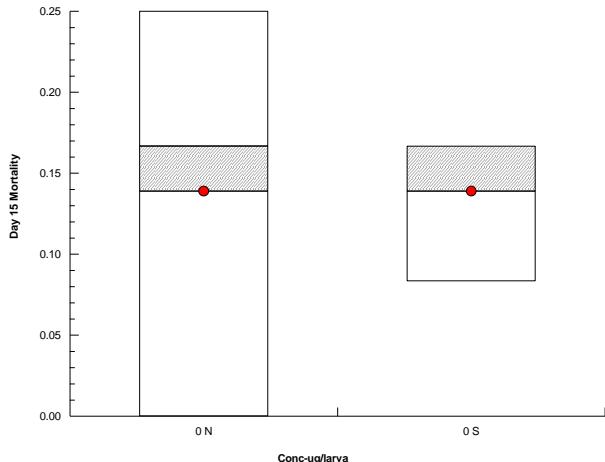
### Fisher Exact Test

Control	vs	Control	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		1.000	Exact	1.0000	Non-Significant Effect

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	S	31	5	36	0.861	0.139	0.0%
0	N	31	5	36	0.861	0.139	0.0%

### Graphics



**CETIS Analytical Report**

Report Date: 11 Nov-19 20:47 (p 7 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study**

BioChem Agrar

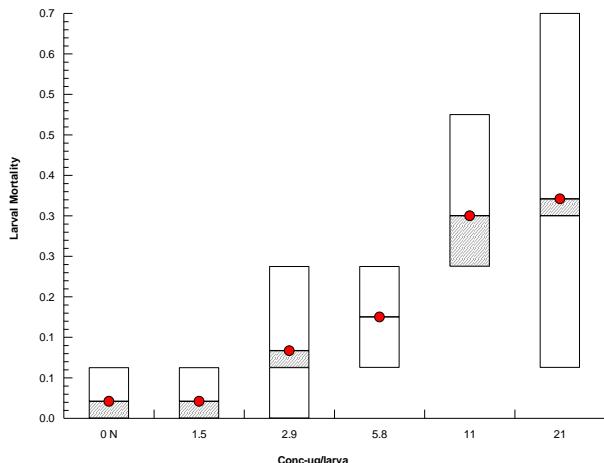
Analysis ID:	19-8925-7740	Endpoint:	Larval Mortality	CETIS Version:	CETISv1.9.5		
Analyzed:	11 Nov-19 20:43	Analysis:	STP 2xK Contingency Tables	Status Level:	1		
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:			
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:			
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:			
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture		
Data Transform	Alt Hyp			NOEL	LOEL	TOEL	TU
Untransformed	C < T			5.8	11	7.987	

**Fisher Exact/Bonferroni-Holm Test**

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	0.754	Exact	0.7535	Non-Significant Effect
		2.9	0.179	Exact	0.3570	Non-Significant Effect
		5.8	0.053	Exact	0.1598	Non-Significant Effect
		11*	0.001	Exact	0.0027	Significant Effect
		21*	0.000	Exact	0.0015	Significant Effect

**Data Summary**

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	35	1	36	0.972	0.0278	0.0%
1.5		35	1	36	0.972	0.0278	0.0%
2.9		32	4	36	0.889	0.111	-300.0%
5.8		30	6	36	0.833	0.167	-500.0%
11		24	12	36	0.667	0.333	-1100.0%
21		23	13	36	0.639	0.361	-1200.0%

**Graphics**

# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 8 of 9)  
 Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID:	10-4948-3654	Endpoint:	Larval Mortality	CETIS Version:	CETISv1.9.5
Analyzed:	11 Nov-19 20:43	Analysis:	STP 2xK Contingency Tables-Numerical Sc	Status Level:	1
Batch ID:	15-4629-2282	Test Type:	OECD 2014 HB Larval Repeat Exp	Analyst:	
Start Date:	22 Aug-16	Protocol:	Larval Chronic Oral Toxicity, 21-day Study	Diluent:	
Ending Date:	12 Sep-16	Species:	Apis mellifera	Brine:	
Test Length:	21d 0h	Taxon:		Source:	Lab In-House Culture
Data Transform	Alt Hyp			NOEL	LOEL
Untransformed	C < T			2.9	5.8
					4.101

### Cochran-Armitage (N) Trend Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control		1.5	0.000	Asymp	0.5000	Non-Significant Effect
		2.9	1.524	Asymp	0.0637	Non-Significant Effect
		5.8*	2.440	Asymp	0.0073	Significant Effect
		11*	4.412	Asymp	5.1E-06	Significant Effect
		21*	4.845	Asymp	6.3E-07	Significant Effect

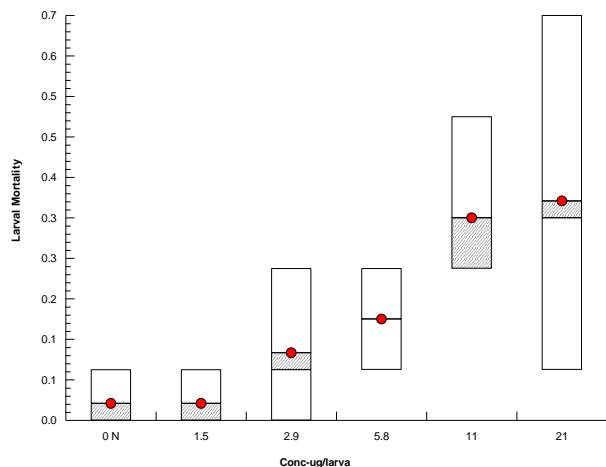
### Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Overall Effect	Pearson Chi-Square Test	27.2	11.1	5.3E-05	Significant Overall Effect
Nonlinearity	Chi-Square Lack of Fit Test	3.7	9.49	0.4485	Non-Significant Lack of Linearity
Overdispersion	Tarone C( $\alpha$ ) Binomial Overdispersion Test	2.52	1.64	0.0059	Significant Overdispersion

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	35	1	36	0.972	0.0278	0.0%
1.5		35	1	36	0.972	0.0278	0.0%
2.9		32	4	36	0.889	0.111	-300.0%
5.8		30	6	36	0.833	0.167	-500.0%
11		24	12	36	0.667	0.333	-1100.0%
21		23	13	36	0.639	0.361	-1200.0%

### Graphics



# CETIS Analytical Report

Report Date: 11 Nov-19 20:47 (p 9 of 9)  
Test Code/ID: 50154601 dd / 14-2719-5080

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 11-3989-3893      Endpoint: Larval Mortality  
Analyzed: 11 Nov-19 20:44      Analysis: Single 2x2 Contingency Table

CETIS Version: CETISv1.9.5  
Status Level: 1

Batch ID: 15-4629-2282      Test Type: OECD 2014 HB Larval Repeat Exp  
Start Date: 22 Aug-16      Protocol: Larval Chronic Oral Toxicity, 21-day Study  
Ending Date: 12 Sep-16      Species: Apis mellifera  
Test Length: 21d 0h      Taxon:

Analyst:  
Diluent:  
Brine:  
Source: Lab In-House Culture      Age:

### Data Transform      Alt Hyp      Comparison Result

Untransformed      C <> T      Solvent Blank passed larval mortality

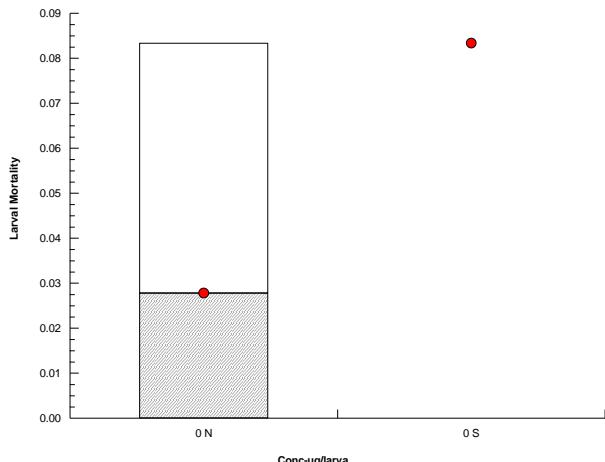
### Fisher Exact Test

Control	vs	Control	Test Stat	P-Type	P-Value	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		0.614	Exact	0.6142	Non-Significant Effect

### Data Summary

Conc-ug/larva	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	S	33	3	36	0.917	0.0833	-200.0%
0	N	35	1	36	0.972	0.0278	0.0%

### Graphics



**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:27 (p 1 of 6)  
**Test Code:** 50154601 dd | 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 02-4228-9344	<b>Endpoint:</b> Adult Emergence Rate	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:25	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-4629-2282	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 01-6308-5245	<b>Code:</b> 50154601 dd	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured daily dietary dose endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
3	-24.62	54.23	54.65	0.8452	0.5858	0.9081	2.967	3.708	0.0837	Non-Significant Lack of Fit

**Point Estimates**

Level	ug/larva	95% LCL	95% UCL
EC5	0.7614	0.2857	1.312
EC10	1.243	0.5715	1.937
EC15	1.73	0.9075	2.533
EC20	2.25	1.304	3.152
EC25	2.819	1.768	3.824
EC40	4.975	3.64	6.518
EC50	7.002	5.332	9.47

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.707	0.2684	1.181	2.233	6.36	2.5E-05	Significant Parameter
Intercept	-1.443	0.2338	-1.901	-0.9845	-6.171	3.4E-05	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	97.37	97.37	1	139.4	<1.0E-37	Significant
Lack of Fit	4.278	1.426	3	2.967	0.0837	Non-Significant
Pure Error	4.805	0.4805	10			
Residual	9.083	0.6987	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	9.083	22.36	0.7666	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	9.936	22.36	0.6992	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	1.57	5.192	0.3129	Equal Variances
	Shapiro-Wilk W Normality Test	0.9668	0.8815	0.8074	Normal Distribution
Distribution	Anderson-Darling A2 Normality Te	0.2676	2.492	0.7132	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 02-4228-9344      Endpoint: Adult Emergence Rate  
 Analyzed: 06 Apr-18 16:25      Analysis: Linear Regression (GLM)

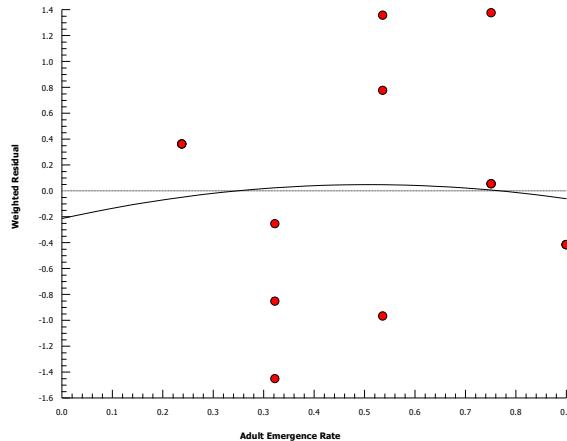
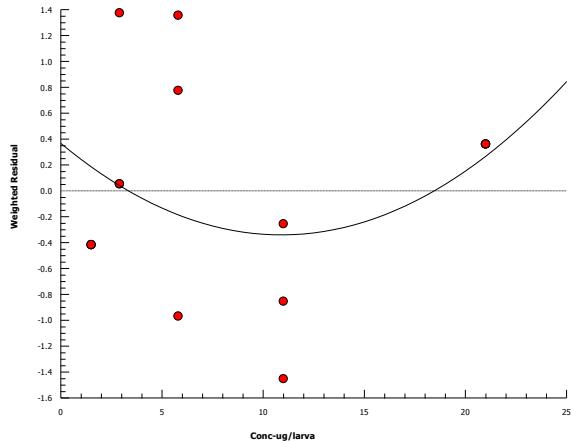
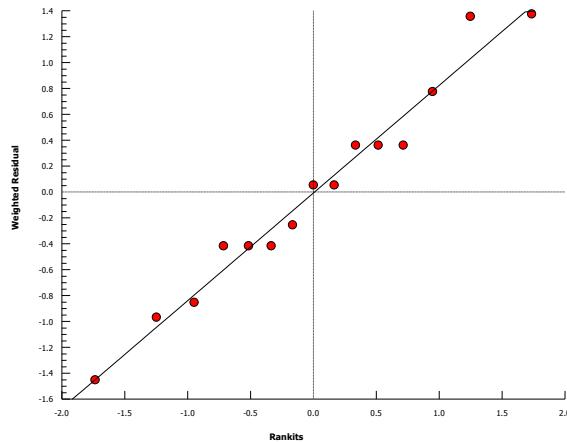
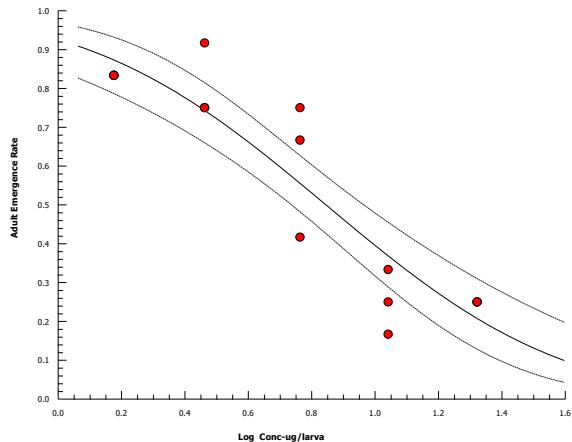
CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Adult Emergence Rate Summary

## Calculated Variate(A/B)

Conc-ug/larva	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1.5		3	0.8333	0.8333	0.8333	0.0000	0.0000	0.00%	0.0%	30	36
2.9		3	0.8056	0.7500	0.9167	0.0556	0.0962	11.95%	3.33%	29	36
5.8		3	0.6111	0.4167	0.7500	0.1002	0.1735	28.39%	26.67%	22	36
11		3	0.2500	0.1667	0.3333	0.0481	0.0833	33.33%	70.0%	9	36
21		3	0.2500	0.2500	0.2500	0.0000	0.0000	0.00%	70.0%	9	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:27 (p 3 of 6)  
**Test Code:** 50154601 dd | 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 10-5429-5425	<b>Endpoint:</b> Day 15 Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:24	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-4629-2282	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 01-6308-5245	<b>Code:</b> 50154601 dd	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured daily dietary dose endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
4	-25.68	56.37	56.78	0.8996	0.6704	0.8714	2.719	3.708	0.1007	Non-Significant Lack of Fit

**Point Estimates**

Level	ug/larva	95% LCL	95% UCL
LC5	0.6266	0.1799	1.189
LC10	1.098	0.415	1.836
LC15	1.603	0.7246	2.478
LC20	2.165	1.121	3.166
LC25	2.802	1.616	3.938
LC40	5.368	3.797	7.311
LC50	7.937	5.856	11.5

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.492	0.2604	0.9812	2.002	5.728	7.0E-05	Significant Parameter
Intercept	-1.342	0.2291	-1.791	-0.8929	-5.857	5.6E-05	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	79.03	79.03	1	95.89	2.3E-07	Significant
Lack of Fit	4.814	1.605	3	2.719	0.1007	Non-Significant
Pure Error	5.901	0.5901	10			
Residual	10.71	0.8242	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	10.71	22.36	0.6347	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	11.51	22.36	0.5682	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	0.7699	5.192	0.5883	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.959	0.8815	0.6750	Normal Distribution
	Anderson-Darling A2 Normality Te	0.3427	2.492	0.4948	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 10-5429-5425      Endpoint: Day 15 Mortality  
 Analyzed: 06 Apr-18 16:24      Analysis: Linear Regression (GLM)

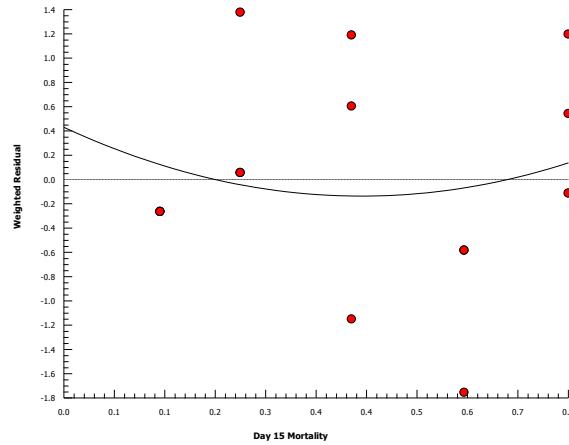
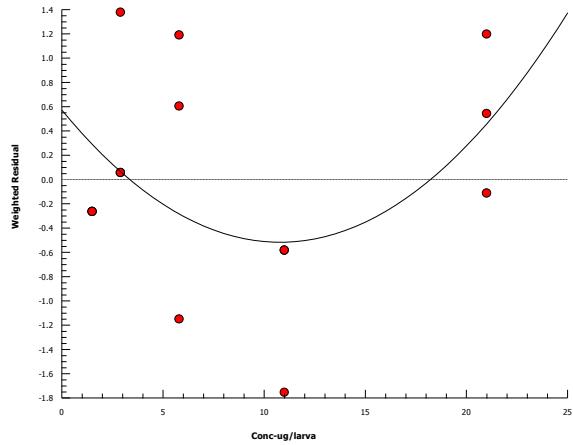
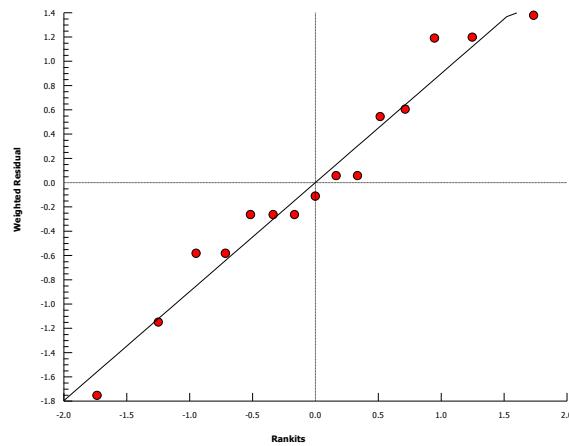
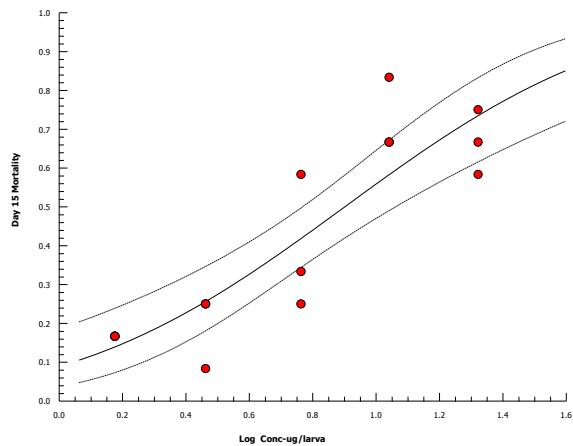
CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Day 15 Mortality Summary

## Calculated Variate(A/B)

Conc-ug/larva	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1.5		3	0.1667	0.1667	0.1667	0.0000	0.0000	0.00%	0.0%	6	36
2.9		3	0.1944	0.0833	0.2500	0.0556	0.0962	49.49%	3.33%	7	36
5.8		3	0.3889	0.2500	0.5833	0.1002	0.1735	44.61%	26.67%	14	36
11		3	0.7222	0.6667	0.8333	0.0556	0.0962	13.32%	66.67%	26	36
21		3	0.6667	0.5833	0.7500	0.0481	0.0833	12.50%	60.0%	24	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:27 (p 5 of 6)  
**Test Code:** 50154601 dd | 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 02-6258-4330	<b>Endpoint:</b> Larval Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:24	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-4629-2282	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 01-6308-5245	<b>Code:</b> 50154601 dd	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured daily dietary dose endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
5	-25.52	56.05	56.47	1.512	0.797	0.9256	0.2392	3.708	0.8670	Non-Significant Lack of Fit

**Point Estimates**

Level	ug/larva	95% LCL	95% UCL
LC5	1.588	0.3492	2.93
LC10	3.093	1.157	4.899
LC15	4.85	2.47	7.282
LC20	6.934	4.218	10.68
LC25	9.423	6.197	15.98
LC40	20.41	12.78	56.35
LC50	32.49	18.34	129.6

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.255	0.301	0.6647	1.845	4.168	0.0011	Significant Parameter
Intercept	-1.897	0.2909	-2.467	-1.327	-6.521	1.9E-05	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	259.8	259.8	1	175.2	<1.0E-37	Significant
Lack of Fit	1.291	0.4304	3	0.2392	0.8670	Non-Significant
Pure Error	17.99	1.799	10			
Residual	19.28	1.483	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	19.28	22.36	0.1147	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	21.41	22.36	0.0652	Non-Significant Heterogeneity
Variances	Bartlett Equality of Variance Test	2.432	9.488	0.6568	Equal Variances
	Mod Levene Equality of Variance	0.9591	5.192	0.5023	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9332	0.8815	0.3047	Normal Distribution
	Anderson-Darling A2 Normality Te	0.5335	2.492	0.1761	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 02-6258-4330      Endpoint: Larval Mortality  
 Analyzed: 06 Apr-18 16:24      Analysis: Linear Regression (GLM)

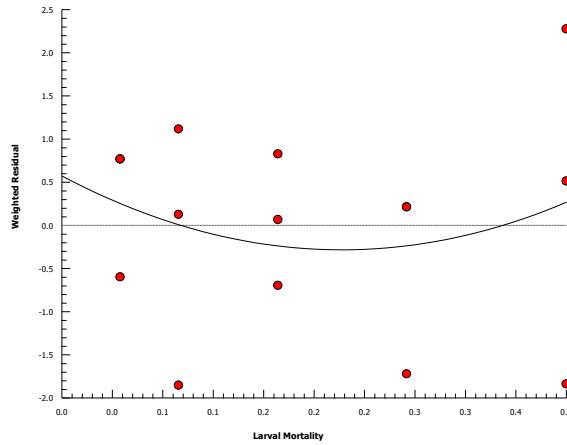
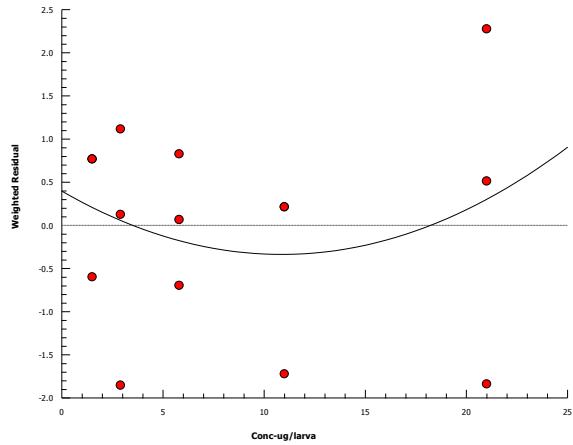
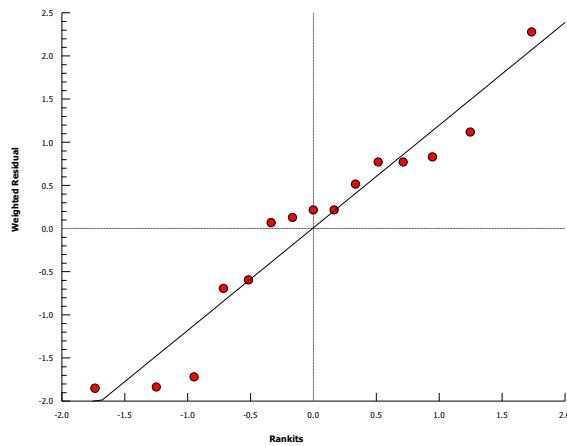
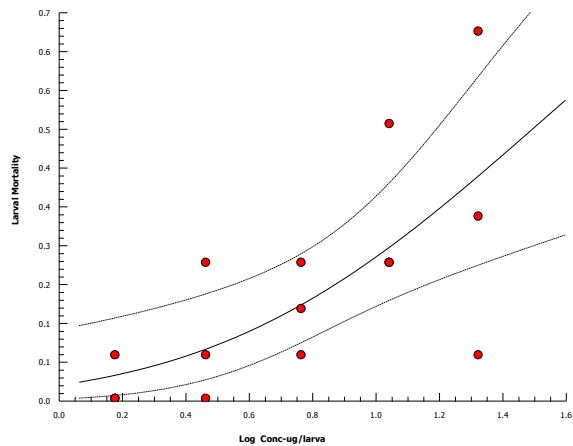
CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Larval Mortality Summary

## Calculated Variate(A/B)

Conc-ug/larva	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1.5		3	0.0278	0.0000	0.0833	0.0278	0.0481	173.20%	0.0%	1	36
2.9		3	0.1111	0.0000	0.2500	0.0735	0.1273	114.60%	8.57%	4	36
5.8		3	0.1667	0.0833	0.2500	0.0481	0.0833	50.00%	14.29%	6	36
11		3	0.3333	0.2500	0.5000	0.0833	0.1443	43.30%	31.43%	12	36
21		3	0.3611	0.0833	0.6667	0.1690	0.2927	81.04%	34.29%	13	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:27 (p 1 of 2)  
**Test Code:** 50154601 dd | 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 03-1594-1462	<b>Endpoint:</b> Adult Emergence Rate	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:25	<b>Analysis:</b> Trimmed Spearman-Kärber	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-4629-2282	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 01-6308-5245	<b>Code:</b> 50154601 dd	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured daily dietary dose endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

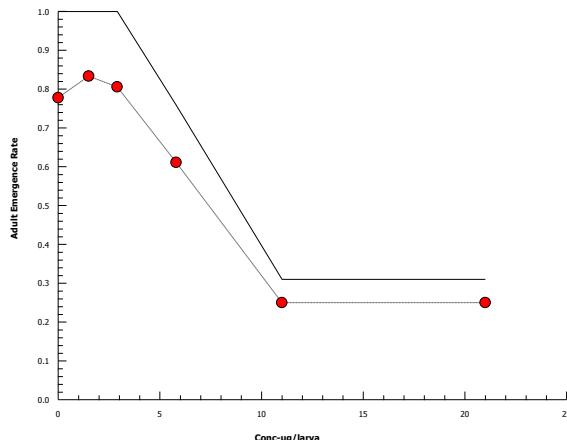
The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Trimmed Spearman-Kärber Estimates**

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.2222	31.03%	0.9238	0.03333	8.391	7.197	9.783

**Adult Emergence Rate Summary**

Conc-ug/larva	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.7778	0.6667	0.8333	0.0556	0.0962	12.37%	0.0%	28	36
1.5		3	0.8333	0.8333	0.8333	0.0000	0.0000	0.00%	-7.14%	30	36
2.9		3	0.8056	0.7500	0.9167	0.0556	0.0962	11.95%	-3.57%	29	36
5.8		3	0.6111	0.4167	0.7500	0.1002	0.1735	28.39%	21.43%	22	36
11		3	0.2500	0.1667	0.3333	0.0481	0.0833	33.33%	67.86%	9	36
21		3	0.2500	0.2500	0.2500	0.0000	0.0000	0.00%	67.86%	9	36

**Graphics**

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:27 (p 2 of 2)  
**Test Code:** 50154601 dd | 14-2719-5080

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 16-4682-2011	<b>Endpoint:</b> Day 15 Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:24	<b>Analysis:</b> Trimmed Spearman-Kärber	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-4629-2282	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 01-6308-5245	<b>Code:</b> 50154601 dd	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured daily dietary dose endpoint...

'Larval Mortality'

The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

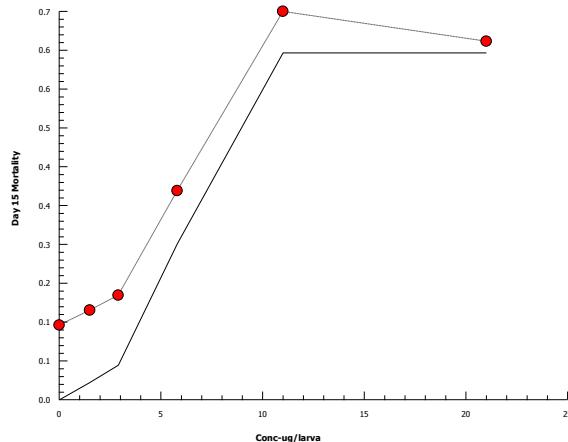
The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Trimmed Spearman-Kärber Estimates**

Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0.1389	35.48%	0.9277	0.04416	8.466	6.908	10.38

**Day 15 Mortality Summary**

Conc-ug/larva	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.1389	0.0000	0.2500	0.0735	0.1273	91.65%	0.0%	5	36
1.5		3	0.1667	0.1667	0.1667	0.0000	0.0000	0.00%	3.23%	6	36
2.9		3	0.1944	0.0833	0.2500	0.0556	0.0962	49.49%	6.45%	7	36
5.8		3	0.3889	0.2500	0.5833	0.1002	0.1735	44.61%	29.03%	14	36
11		3	0.7222	0.6667	0.8333	0.0556	0.0962	13.32%	67.74%	26	36
21		3	0.6667	0.5833	0.7500	0.0481	0.0833	12.50%	61.29%	24	36

**Graphics**

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:32 (p 1 of 6)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 00-0733-8455	<b>Endpoint:</b> Adult Emergence Rate	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:31	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations  
'Mortality' endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
3	-24.54	54.08	54.49	2.263	0.5777	0.9094	2.86	3.708	0.0906	Non-Significant Lack of Fit

**Point Estimates**

Level	mg ai/kg	95% LCL	95% UCL
EC5	20.56	7.842	35.14
EC10	33.34	15.53	51.62
EC15	46.19	24.49	67.26
EC20	59.86	34.99	83.44
EC25	74.76	47.24	101
EC40	130.9	96.22	170.9
EC50	183.4	140.2	247

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.731	0.2716	1.199	2.263	6.373	2.4E-05	Significant Parameter
Intercept	-3.918	0.607	-5.107	-2.728	-6.455	2.2E-05	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	97.31	97.31	1	141.5	<1.0E-37	Significant
Lack of Fit	4.13	1.377	3	2.86	0.0906	Non-Significant
Pure Error	4.813	0.4813	10			
Residual	8.942	0.6879	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	8.942	22.36	0.7773	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	9.78	22.36	0.7118	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	1.57	5.192	0.3129	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9683	0.8815	0.8320	Normal Distribution
	Anderson-Darling A2 Normality Te	0.2571	2.492	0.7475	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

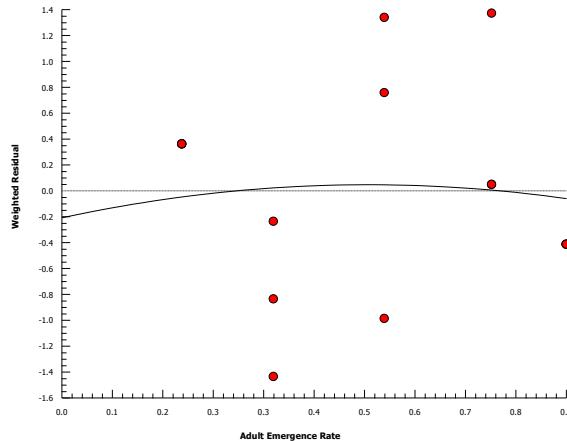
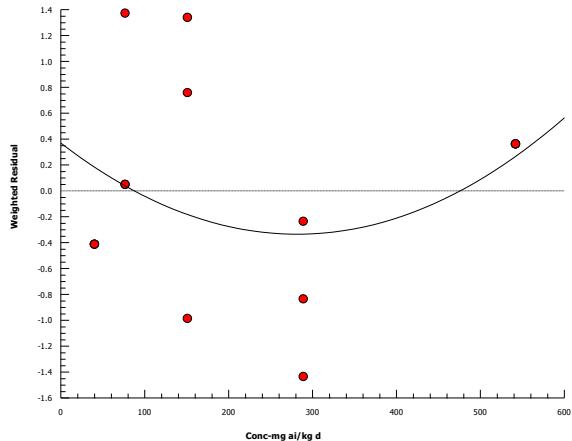
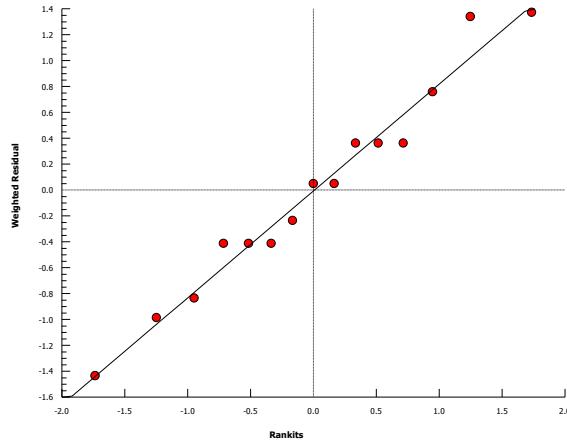
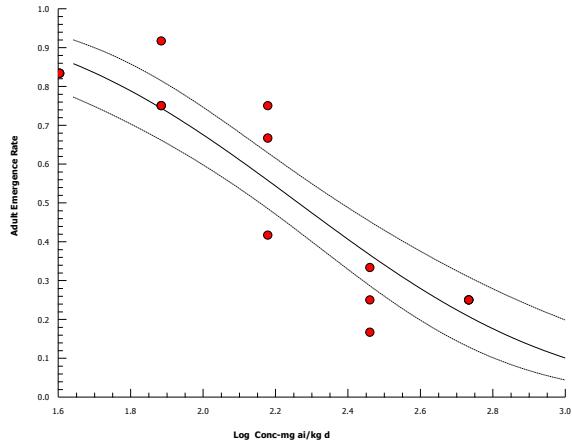
BioChem Agrar

Analysis ID: 00-0733-8455      Endpoint: Adult Emergence Rate  
 Analyzed: 06 Apr-18 16:31      Analysis: Linear Regression (GLM)      CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Adult Emergence Rate Summary

Conc-mg ai/kg d	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
40.2		3	0.8333	0.8333	0.8333	0.0000	0.0000	0.00%	0.0%	30	36
76.7		3	0.8056	0.7500	0.9167	0.0556	0.0962	11.95%	3.33%	29	36
151		3	0.6111	0.4167	0.7500	0.1002	0.1735	28.39%	26.67%	22	36
289		3	0.2500	0.1667	0.3333	0.0481	0.0833	33.33%	70.0%	9	36
542		3	0.2500	0.2500	0.2500	0.0000	0.0000	0.00%	70.0%	9	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:32 (p 3 of 6)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 02-7750-2962	<b>Endpoint:</b> Day 15 Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:31	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations  
'Mortality' endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
4	-25.62	56.24	56.65	2.317	0.661	0.8727	2.645	3.708	0.1064	Non-Significant Lack of Fit

**Point Estimates**

Level	mg ai/kg	95% LCL	95% UCL
LC5	16.97	4.978	31.89
LC10	29.5	11.34	48.97
LC15	42.85	19.63	65.82
LC20	57.64	30.16	83.83
LC25	74.33	43.26	104
LC40	141.1	100.3	191.4
LC50	207.5	153.7	299

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.513	0.2636	0.9962	2.029	5.739	6.8E-05	Significant Parameter
Intercept	-3.505	0.591	-4.664	-2.347	-5.931	5.0E-05	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	79.04	79.04	1	96.96	2.2E-07	Significant
Lack of Fit	4.689	1.563	3	2.645	0.1064	Non-Significant
Pure Error	5.909	0.5909	10			
Residual	10.6	0.8153	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	10.6	22.36	0.6444	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	11.38	22.36	0.5791	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	0.7699	5.192	0.5884	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9584	0.8815	0.6638	Normal Distribution
	Anderson-Darling A2 Normality Te	0.3503	2.492	0.4759	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 02-7750-2962      Endpoint: Day 15 Mortality  
 Analyzed: 06 Apr-18 16:31      Analysis: Linear Regression (GLM)

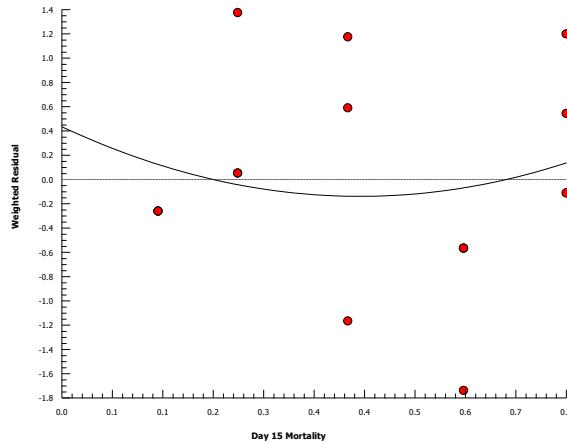
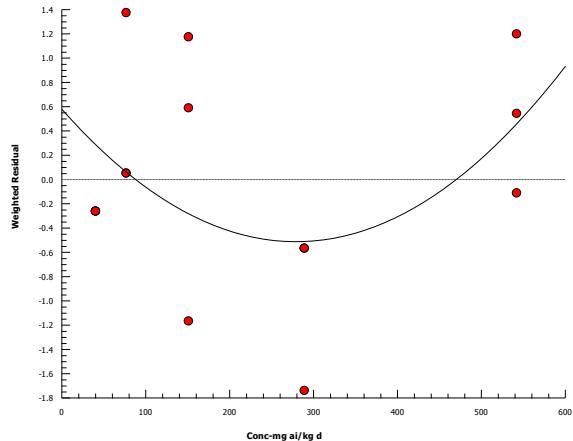
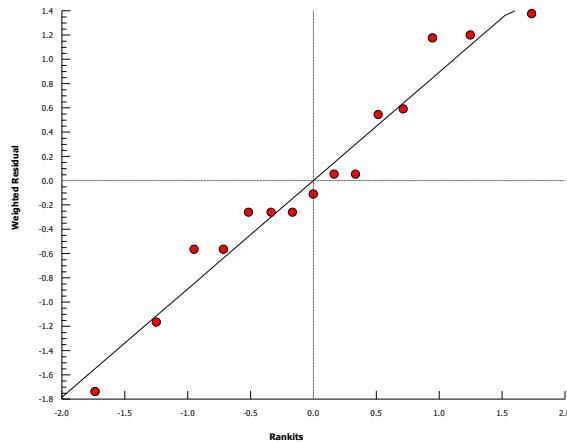
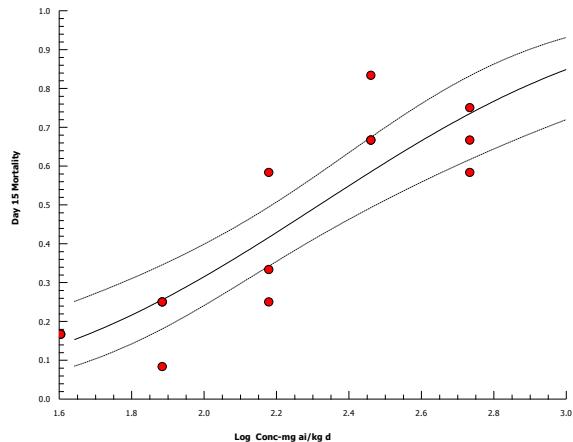
CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Day 15 Mortality Summary

## Calculated Variate(A/B)

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
40.2		3	0.1667	0.1667	0.1667	0.0000	0.0000	0.00%	0.0%	6	36
76.7		3	0.1944	0.0833	0.2500	0.0556	0.0962	49.49%	3.33%	7	36
151		3	0.3889	0.2500	0.5833	0.1002	0.1735	44.61%	26.67%	14	36
289		3	0.7222	0.6667	0.8333	0.0556	0.0962	13.32%	66.67%	26	36
542		3	0.6667	0.5833	0.7500	0.0481	0.0833	12.50%	60.0%	24	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:32 (p 5 of 6)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 16-8616-6523	<b>Endpoint:</b> Larval Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:31	<b>Analysis:</b> Linear Regression (GLM)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations  
'Mortality' endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Linear Regression Options**

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

**Regression Summary**

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
5	-25.51	56.02	56.44	2.922	0.787	0.9254	0.233	3.708	0.8713	Non-Significant Lack of Fit

**Point Estimates**

Level	mg ai/kg	95% LCL	95% UCL
LC5	42.38	9.526	77.58
LC10	81.87	31.05	128.9
LC15	127.7	65.62	190.7
LC20	181.7	111.3	278.3
LC25	246	162.6	414.3
LC40	527.7	332.5	1436
LC50	835.2	474.9	3266

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
Slope	1.271	0.3045	0.6738	1.867	4.173	0.0011	Significant Parameter
Intercept	-3.712	0.7119	-5.108	-2.317	-5.215	1.7E-04	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	258.7	258.7	1	174.7	<1.0E-37	Significant
Lack of Fit	1.258	0.4192	3	0.233	0.8713	Non-Significant
Pure Error	17.99	1.799	10			
Residual	19.25	1.481	13			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Goodness-of-Fit	Pearson Chi-Sq GOF Test	19.25	22.36	0.1156	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	21.38	22.36	0.0658	Non-Significant Heterogeneity
Variances	Bartlett Equality of Variance Test	2.433	9.488	0.6567	Equal Variances
	Mod Levene Equality of Variance	0.9624	5.192	0.5009	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9343	0.8815	0.3159	Normal Distribution
	Anderson-Darling A2 Normality Te	0.5259	2.492	0.1838	Normal Distribution

## Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study

BioChem Agrar

Analysis ID: 16-8616-6523      Endpoint: Larval Mortality  
 Analyzed: 06 Apr-18 16:31      Analysis: Linear Regression (GLM)

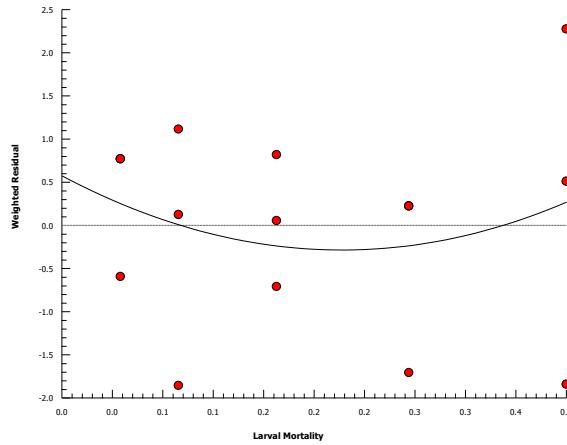
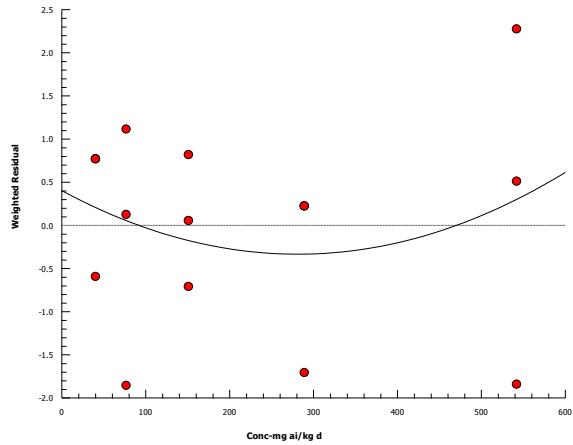
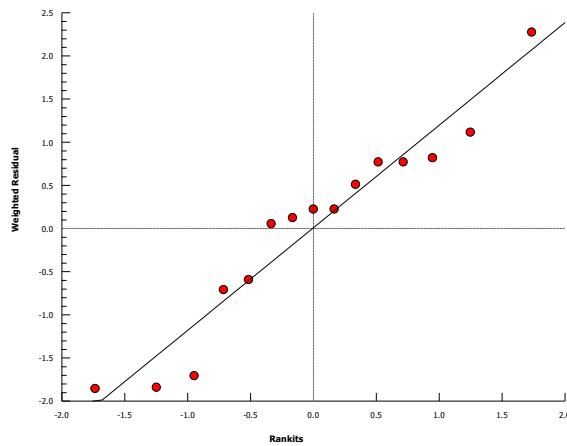
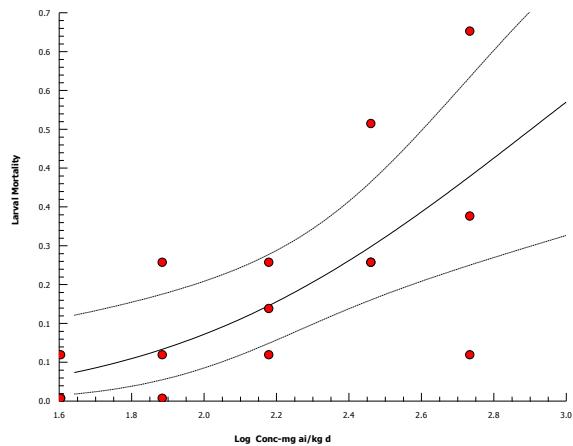
CETIS Version: CETISv1.9.2  
 Official Results: Yes

## Larval Mortality Summary

## Calculated Variate(A/B)

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
40.2		3	0.0278	0.0000	0.0833	0.0278	0.0481	173.20%	0.0%	1	36
76.7		3	0.1111	0.0000	0.2500	0.0735	0.1273	114.60%	8.57%	4	36
151		3	0.1667	0.0833	0.2500	0.0481	0.0833	50.00%	14.29%	6	36
289		3	0.3333	0.2500	0.5000	0.0833	0.1443	43.30%	31.43%	12	36
542		3	0.3611	0.0833	0.6667	0.1690	0.2927	81.04%	34.29%	13	36

## Graphics

Log-Normal:  $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:33 (p 1 of 2)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 16-1587-3140	<b>Endpoint:</b> Adult Emergence Rate	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:31	<b>Analysis:</b> Trimmed Spearman-Kärber	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations  
'Mortality' endpoint...  
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

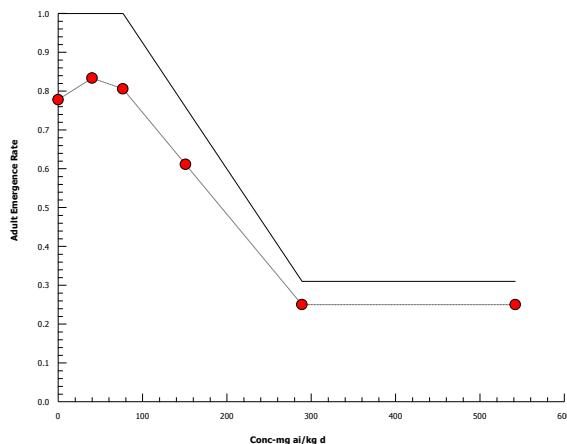
The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Trimmed Spearman-Kärber Estimates**

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.2222	31.03%	2.342	0.0338	219.6	187.9	256.6

**Adult Emergence Rate Summary**

Conc-mg ai/kg d	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.7778	0.6667	0.8333	0.0556	0.0962	12.37%	0.0%	28	36
40.2		3	0.8333	0.8333	0.8333	0.0000	0.0000	0.00%	-7.14%	30	36
76.7		3	0.8056	0.7500	0.9167	0.0556	0.0962	11.95%	-3.57%	29	36
151		3	0.6111	0.4167	0.7500	0.1002	0.1735	28.39%	21.43%	22	36
289		3	0.2500	0.1667	0.3333	0.0481	0.0833	33.33%	67.86%	9	36
542		3	0.2500	0.2500	0.2500	0.0000	0.0000	0.00%	67.86%	9	36

**Graphics**

**CETIS Analytical Report**

**Report Date:** 06 Apr-18 16:33 (p 2 of 2)  
**Test Code:** 50154601 dc | 15-2206-3849

**Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study****BioChem Agrar**

<b>Analysis ID:</b> 00-7213-8697	<b>Endpoint:</b> Day 15 Mortality	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 06 Apr-18 16:31	<b>Analysis:</b> Trimmed Spearman-Kärber	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-2388-2875	<b>Test Type:</b> OECD 2014 HB Larval Repeat Exp	<b>Analyst:</b>
<b>Start Date:</b> 22 Aug-16	<b>Protocol:</b> Larval Chronic Oral Toxicity, 21-day Study	<b>Diluent:</b>
<b>Ending Date:</b> 12 Sep-16	<b>Species:</b> Apis mellifera	<b>Brine:</b>
<b>Duration:</b> 21d 0h	<b>Source:</b> Lab In-House Culture	<b>Age:</b>
<b>Sample ID:</b> 18-7409-5437	<b>Code:</b> 50154601 dc	<b>Client:</b> EPA OSCPP EFED
<b>Sample Date:</b> 22 Aug-16	<b>Material:</b> Metconazole	<b>Project:</b> Fungicide
<b>Receipt Date:</b> 12 Sep-16	<b>Source:</b> Valent U.S.A. Corporation	
<b>Sample Age:</b> n/a	<b>Station:</b>	

**Comments:**

125619 50154601 - measured dietary concentrations

'Larval

Mortality' endpoint...

The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.

The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

**Trimmed Spearman-Kärber Estimates**

Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0.1389	35.48%	2.346	0.04479	221.6	180.3	272.4

**Day 15 Mortality Summary**

Conc-mg ai/kg d	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.1389	0.0000	0.2500	0.0735	0.1273	91.65%	0.0%	5	36
40.2		3	0.1667	0.1667	0.1667	0.0000	0.0000	0.00%	3.23%	6	36
76.7		3	0.1944	0.0833	0.2500	0.0556	0.0962	49.49%	6.45%	7	36
151		3	0.3889	0.2500	0.5833	0.1002	0.1735	44.61%	29.03%	14	36
289		3	0.7222	0.6667	0.8333	0.0556	0.0962	13.32%	67.74%	26	36
542		3	0.6667	0.5833	0.7500	0.0481	0.0833	12.50%	61.29%	24	36

**Graphics**